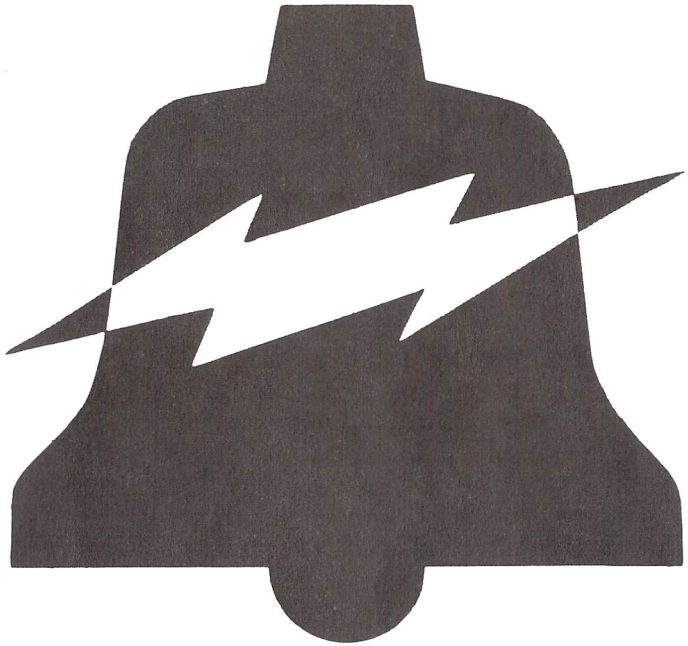


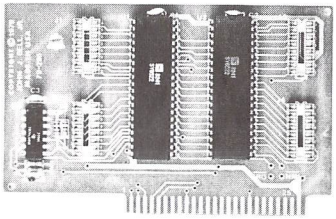
JOHN BELL ENGINEERING, INC.

Catalog #6

MICROCOMPUTERS / INTERFACES
FOR
ENGINEERS — SCIENTISTS

415-592-8411

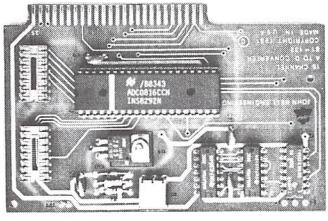
en-gi-neer-ing n: a science by which the properties of matter and sources of energy are made useful to man in structures, machines, and products.



6522 PARALLEL INTERFACE

This board has two 6522 VIA's. It plugs into one of the APPLE slots. Sample programs for a real time clock and parallel printer interface are included. It interfaces with the 80-244 EPROM Programmer and the 82-332 120 VAC Controller and the 82-334 Input protector. Each of the 4 ports has 8 data lines, 2 handshake lines, and +5-Gnd.

To order:
79-295A Assembled and tested **$69.95**

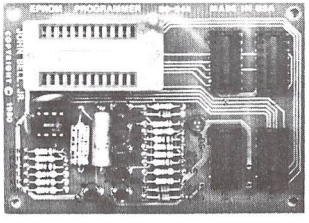


A-D CONVERTER

This board has 16 analog inputs that have a 0-5 volt range, 8 bit resolution, high impedance >20 meg. Conversion time is less than 100 μs per channel. Two 16 pin dip sockets are used for input. This board can be used to measure voltage, temp., or anything that can be converted to voltage.

This board plugs into a slot in the APPLE. Example programs included.
To order:
81-132A Assembled and tested **$89.95**

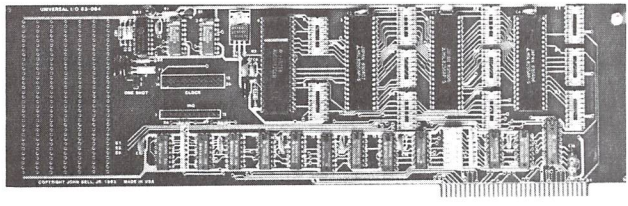
EPROM PROGRAMMER



This board is used with the 79-295 to allow the APPLE II to program 2716 and 2532 EPROMs. It connects to the 79-295 via 4 ribbon cables so the programmer is outside of the APPLE. This way you don't have to remove the cover to program EPROMs. Power is provided by the APPLE through the ribbon cables. You can read, write, and copy.

This board uses four 16 pin ribbon cables for interfacing to the 79-295.
To order:
80-244A Assembled and tested **$49.95** (with TEXTOOL socket)
4 cables **$17.00**

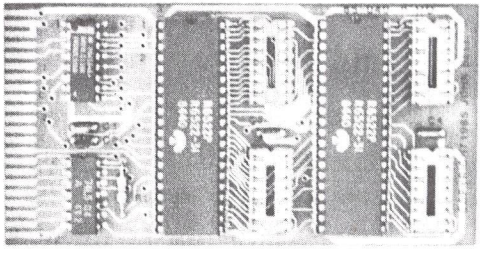
PERIPHERALS FOR THE IBM PC-XT AND COMMODORE 64



UNIVERSAL I/O

This board has three 8255 PIA's that make up the nine 8 bit parallel I/O ports. That's 72 I/O lines! This board also has 16 analog inputs. Each analog input has a 0–5 volt range, 8 bit resolution (256 steps), >20 Meg. input impedance. Conversion time is 200 μs per channel. This board also has interrupt-timer circuitry, prototyping area, and a LED to indicate power. A dip switch is used to select the I/O address. This board is designed for the scientist and engineer to be used in the lab or industrial control functions. The ports interface via 16 pin ribbon cables to the 82-332 120 VAC controller or the 82-334 Input protector. Sample programs are provided in the documentation.

To order:
83-064A Assembled and tested **$299.95**

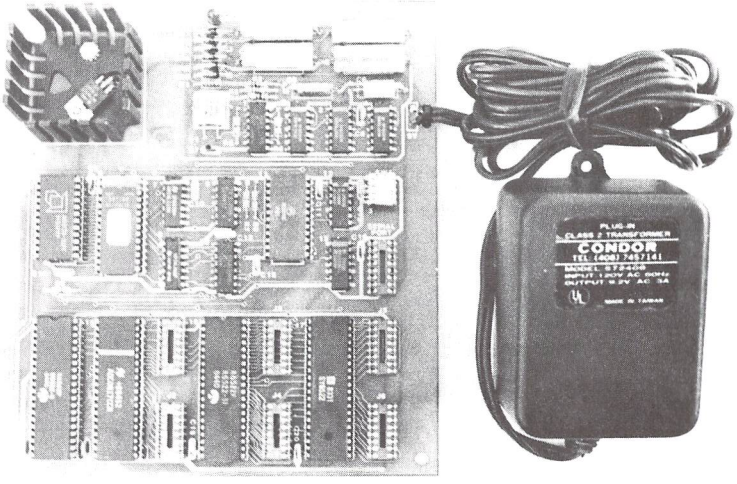


6522 PARALLEL INTERFACE FOR THE COMMODORE 64

This board has two 6522 VIA's. It plugs into the cartridge expansion slot. Example programs are included. This board will interface to other JBE boards by 16 pin ribbon cables such as the 82-332 120 VAC Controller and the 82-334 Input protector. Each of the 4 ports has 8 data lines, 2 handshake lines, and +5-Gnd.

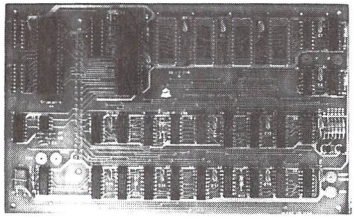
To order:
85-040A Assembled and tested **$69.95**

I/O FOR THE MACINTOSH AND APPLE IIc



This is a complete stand alone computer including the power supply. It interfaces to the MACINTOSH and other computers or a terminal through a serial port. To use this board with the MACINTOSH you will need Microsoft Basic or some other way to access the modem port. This board has four 8 bit parallel ports (32 lines) that can be input or output and 16 analog inputs (0-5 volts 8 bit). The processor is a 6502 and the four ports are two 6522's. Control software is included in a 2716 EPROM. Power is supplied by a U.L. approved wall transformer. This board can be used for industrial control, lab experiments, and to control things in your house. Example programs are included in the documentation. This board also interfaces to other JBE products such as the 120 AC controller and the Input protector.

To order:
85-020A MAC I/O Assembled and tested **$299.95**



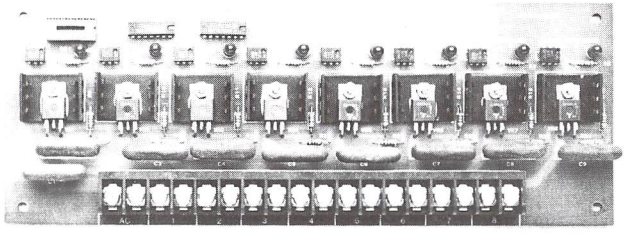
MINI VIDEO (40 × 24)

This board can be used to add a Video display to your AIM or other computer. It can also, with the addition of a parallel keyboard, 5 volt power supply, and video monitor, run Tom Pittman's Tiny Basic. The display is 40 columns by 24 lines.

This board uses a 6502 MPU and the video is done with TTL. It has one 6522 VIA for parallel I/O. The software and character generator are EPROM's.

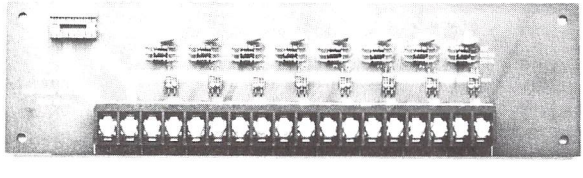
To order:

82-140A	Assembled and tested w/o EPROMs	**$149.95**
82-140E	Tiny Basic EPROM set	**$ 59.90**
82-140G	General purpose display EPROM set	**$ 39.90**
84-142A	Mini EPROM Board (6K)	**$ 24.95**
22/44	pin connector	**$ 6.00**



120 VAC CONTROL This board has eight optically isolated triac switches. Each switch can control up to 200 watts. The voltage controlled can be 12 to 130 volts A.C. only. It connects via a 16 pin ribbon cable to a parallel output port. Screw terminals are provided for 120 vac connection.

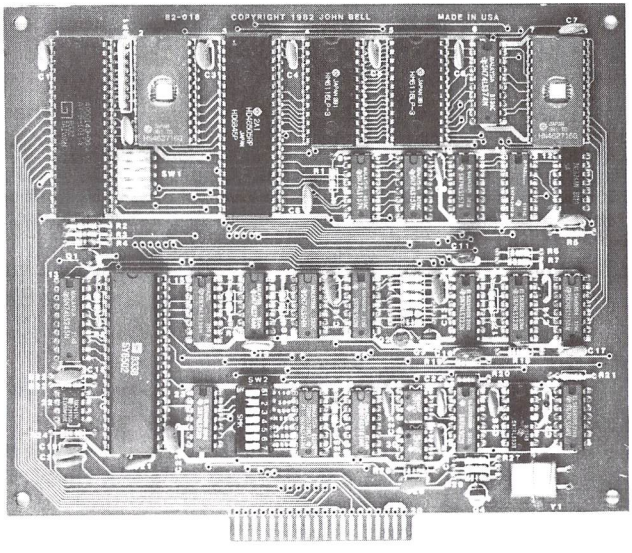
Order part number 82-332A **$119.95**



INPUT PROTECTOR This board protects parallel or analog inputs. It connects to the port with a 16 pin ribbon cable and has screw terminals for external circuits.

Order part number 82-334A **$89.95**

VIDEO TERMINAL



82-018 VIDEO TERMINAL BOARD

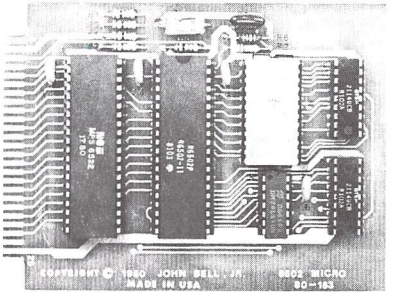
This is a complete stand alone Video Terminal board. All that is needed besides this board is a parallel ASCII keyboard, monitor, and a power supply. It displays 80 columns by 25 lines of upper and lower case characters. Data is transferred by RS-232 at rates of 110 to 9600 baud. This board comes with software to emulate the Hazeltine 1500 terminal. It will insert and delete lines and X-Y cursor positioning. It uses a 6502 MPU and a 6545 CRT controller. The software and character generator are 2716 EPROMs. It has 4K of static RAM (6116s). The board size is 6.2 × 7.2 inches. All connections are made through a 20/40 pin connector with .1 inch spacing.

This Terminal can be used in lab experiments for the scientist and for industrial control, security systems, point of sale computer-cashregister, and as a terminal for JBE computers.

To order:
82-018A Assembled and Tested **$199.95**

OEM discounts available.

SINGLE BOARD COMPUTERS — CONTROLLERS

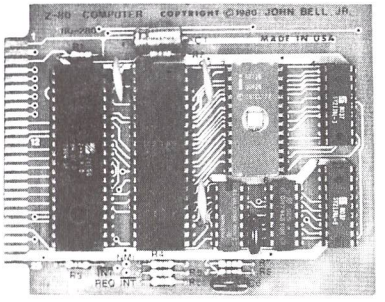


6502 MICROCOMPUTER

This 3.3 × 4.2 inch board uses the 6502 MPU, 6522 VIA, 1K RAM, and 2716 or 2532 EPROM. It has a RC 1 MHz clock and power on reset. Power requirements 5 volts at 350 ma. This board was designed as a controller for industrial and lab applications. A 2716 EPROM with a monitor program is available. The monitor communicates serial RS-232.

To order:

80-153A	Assembled and tested	**$110.95**
80-153E	2716 EPROM Monitor	**$ 19.95**

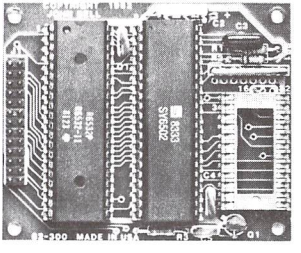


Z-80 MICROCOMPUTER

This 3.3 × 4.2 inch board uses the Z-80 MPU, Z-80 PIO, 1K RAM, and 2716 or 2532 EPROM. It has a RC 2 MHz clock and power on reset. Power requirements 5 volts at 300 ma. This board was designed as a controller for industrial and lab applications. A 2716 EPROM with a monitor program is available. The monitor communicates serial RS-232.

To order:

80-280A	Assembled and tested	**$129.95**
80-280E	2716 EPROM Monitor	**$ 19.95**



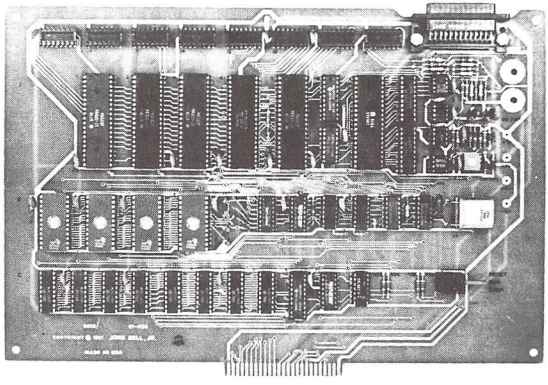
TCM MODULE

This 2.5 × 3 inch 6502 based computer-controller has two 8 bit I/O ports (6532), 128 bytes of RAM, and 2716 or 2532 EPROM. It has power on reset and a 1 MHz RC clock. This is the most cost effective and smallest computer-controller we sell. Call for OEM prices.

To order:

82-300A	Assembled and tested	**$59.95**

SINGLE BOARD COMPUTERS



81-030 "JBE 1 COMPUTER"

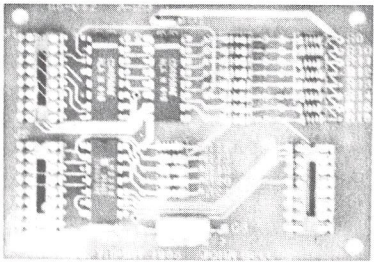
This computer has 4 6522 VIA's that make up eight 8 bit parallel I/O ports. It also has a serial RS-232 port for communication with a terminal or host computer. There are four sockets for 2716 or 2532 EPROMS (8K or 16K total). This board has 4K of 2114 RAM. There is a cassette tape interface for saving and loading programs. The power requirements are +5 at 1.5 amps, +12 at 30 ma., and −12 at 30 ma. This board has power on reset and a 1 Mhz crystal clock. A simple monitor program and Tiny Basic are available on 2716 EPROMS.

To order:

81-030A	Assembled and tested	**$399.95**
81-030P	Assembled and tested partially populated	**$299.95**
F8	Monitor EPROM	**$ 19.95**
F0*	Tiny Basic by Tom Pittman	**$ 19.95**

*Note: To use the Tiny Basic you must have the Monitor.

OEM discounts available.

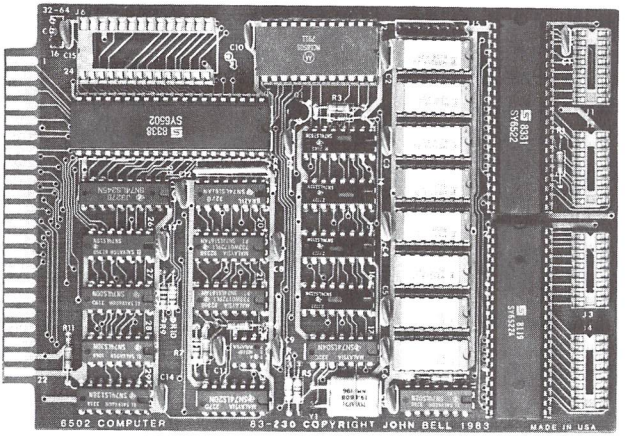


ANALOG I/O

This board has a 8 bit A to D converter and four comparators. It was designed to interface to two parallel ports of a computer. It can be used to output voltages from 0 to 2.55 volts. It can also be used to input (measure) 0 to 2.55 volts on four channels. Connections to this board are made by 16 pin ribbon cables. Programming examples are included.

To order:

85-042A Assembled and tested **$49.95**



83-230 "SLIM II COMPUTER"

This 4.5 × 6.5 board has a 6502 Microprocessor, two 6522 versatile Interface Adapters, 55K of 4164 DRAM, Serial RS-232 Port, and 2K to 8K of EPROM (2716, 2532, or 2564). The 22/44 pin bus is similar to the AIM computer bus. This computer has power on reset and a 1.2288 MHz crystal clock. This computer was designed to stand alone or it can be expanded by using the 81-320 Six Slot Mother Board, 81-292 Analog I/O, and the 82-036 12 Port I/O Board. You can use an APPLE II computer with the 79-295 Parallel I/O and 80-244 EPROM Programmer to develop programs for the SLIM II.

This computer can be used to control lab experiments for the scientist and for industrial robot control, security systems, point of sale computer-cashregister, and to simulate complex logic functions.

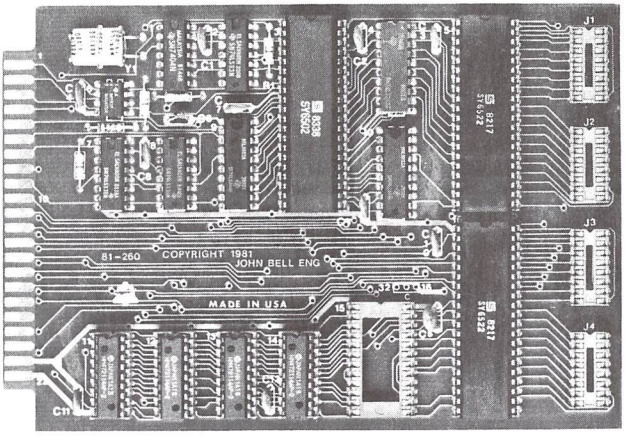
An EPROM (2716) with a monitor is available. This program communicates serial RS-232 110 to 9600 baud using the serial port. To order the EPROM order part number 83-230E for $19.95.

To order:

83-230A	Assembled and Tested	**$299.95**
83-230E	EPROM Monitor	**$ 19.95**

OEM discounts available.

SINGLE BOARD COMPUTERS



81-260 "SLIM COMPUTER"

This 4.5 x 6.5 board has a 6502 Microprocessor, two 6522 versatile Interface Adapters, 2K of 2114 RAM, and 2K or 4K of EPROM (2716 or 2532). The fully buffered 22/44 pin bus is similar to the AIM computer bus. This computer has power on reset and a 1 MHz crystal clock. This computer can stand alone or it can be expanded by using the 81-320 Six Slot Mother Board, 81-330 32K RAM-EPROM Board, 81-292 Analog I/O, and the 82-036 12 Port I/O Board. You can use an APPLE II computer with the 79-295 Parallel I/O and 80-244 EPROM Programmer to develop programs for the SLIM.

This computer can be used to control lab experiments for the scientist and for industrial robot control, security systems, point of sale computer-cashregister, and to simulate complex logic functions.

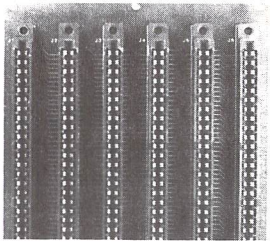
An EPROM (2532) with a monitor and Tiny Basic is available. This program communicates serial RS-232 110 to 1200 baud using one of the VIA's. To order the EPROM, order part number 81-260E for $39.95.

To order:

81-260A Assembled and Tested	**$199.95**
81-260E EPROM Monitor and Basic	**$ 39.95**

OEM discounts available.

PERIPHERALS FOR THE SLIM — SLIM II

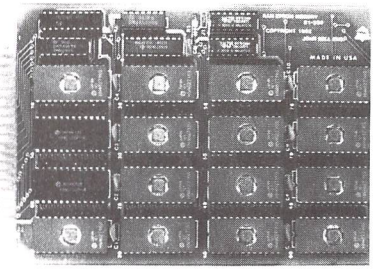


SIX SLOT MOTHER BOARD

This board has six 22/44 pin connectors. It was designed to be used with the SLIM computer to expand the system by adding more I/O and RAM or EPROM. It will mount in a Vector card cage. The card spacing is .750 inches.

These boards can also be used to expand the AIM, and SYM computers.

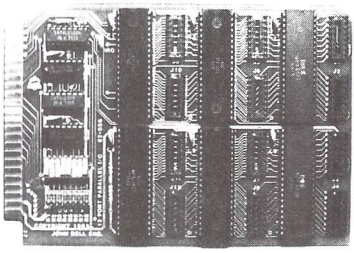
To order: 81-320A Assembled with 6 gold connectors **$99.95**



RAM — EPROM MEMORY 32K

This board has 16 24 pin sockets that will accept 6116 RAM's or 2716 EPROM's. RAM's and EPROM's can be mixed. The memory is mapped from 0000 to 7FFF. The first 2K can be deselected to allow for the 2K RAM on the SLIM computer.

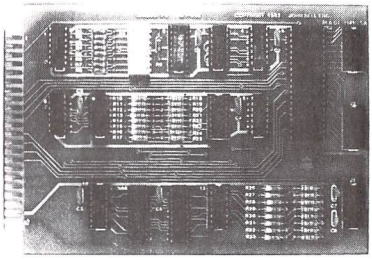
To order: 81-330A Assembled and tested without memory **$99.95**



12 PORT PARALLEL I/O

This board has six 6522 VIA's. This is a total of 96 I/O lines. Each of the 12 ports has 8 data lines, 2 handshake lines, and +5 and ground. The outputs are TTL and can sink at least 1.6 ma. Each 6522 also has two timers and a serial shift register.

To order: 82-036A Assembled and tested **$169.95**



ANALOG I/O INTERFACE

This board has 16 analog inputs and two analog outputs. The inputs are 8 bit (256 steps) 0-5 volt high impedance with a conversion time of 200 μs. The outputs are R-2R ladders (R=15K) driven between 0-5 volts and are 8 bit (256 steps).

To order: 81-292A Assembled and tested **$199.95**

JOHN BELL ENGINEERING, INC.

Ordering Information — 9 am to 4 pm P.S.T. — (415) 592-8411

USA — We accept check, money order, VISA, MC, and cash. Add 6.5% tax in California and 3% for shipping (do not send more than $15.00 for shipping). For C.O.D. add $2.00. Will call orders must be called in advance. Call (415) 592-8411.

Foreign — We accept check, money order (in U.S. funds), VISA, and MC. Add 10% for shipping (do not send more than $15.00 for shipping). We do not send C.O.D. outside the U.S.A. For more information call (415) 592-8411.

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Belmont, CA. 94002

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10-24	12%	75-99	27%	500-UP	35%

FROM:
John Bell Engineering, Inc.
400 Oxford Way
Belmont, CA. 94002

TO: _____

DATA REQUESTED VIA ELECTRONIC DESIGN
DESCRIPTION: MICROCOMPUTERS & INTERFAC
ISSUE DATE: 05/30/85 RS#: 259 PG: 189
ITEM: A TEL. #: ENGRS.:

Postage

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